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GEOLOGICAL NOTES.—Professor E. W. Hilgard summarizes in the *American Journal of Science* for July the facts for a hypothesis of a temporary and partial isolation of the Gulf of Mexico from the Atlantic ocean during the later portion of the Tertiary period. In the same journal Professor R. P. Whitfield refers a group of supposed fossil vegetables, named Dictyophyton, to the sponges, and in this view he is confirmed by Dr. J. W. Dawson.—Professor G. H. Stone publishes in the Proceedings of the Boston Society of Natural History, an elaborate discussion of the kames of Maine and the northern States, and in the same publication Dr. M. E. Wadsworth treats of the origin of the iron ores of the Marquette district, Lake Superior, endeavoring to prove that they are eruptive rather than sedimentary. Two other contributions to lithology are comprised in Dr. G. W. Hawe's paper on normal mesozoic diabase upon the Atlantic border, and on the determination of feldspar in thin sections of rocks, in the Proceedings of the National Museum.

GEOGRAPHY AND TRAVELS.¹

THE IMPERIAL GAZETTEER OF INDIA².—The six volumes of this great work now published, with the three yet to be issued, will form one of the most important additions yet made to geographical literature. That excellent authority, Mr. Clements R. Markham, contributes a review of the work to the London *Academy*, from which we learn that in 1862 Madras, Bengal and the central provinces of India, feeling the need of correct information, organized plans for supplying a want for which no provision had been made by the general government and the compilation of manuals for special districts was begun. But the need was felt of a uniform system and a central supervision. In 1869, Dr. Hunter submitted his plan. "It clearly defined the objects of the undertaking and discussed the system through which these objects might best be secured. A series of questions was prepared, the answers to which would illustrate the topographical, ethnical, agricultural, industrial, administrative, and medical aspects of an Indian district. Provincial compilers were then appointed and the series of questions served as a basis for each compiler's local survey. The accounts of the districts were brought together by an editor in each province, on a uniform plan, who prepared the gazetteer of the province, the whole being under the supervision of Dr. Hunter, as Director-General of Statistics to the Government of India. Thus, in the space of twelve years an elaborate account of the 240 districts into which British India is divided was completed, and formed the statistical survey. Such a work, intended as it is to furnish full information to administrators, must

¹ Edited by ELLIS H. YARNALL, Philadelphia.

² The Imperial Gazetteer of India. By W. W. Hunter, C. I. E., LL.D., Director-General of Statistics to the Government of India. London, 1881.

be at once comprehensive and minute. Hence the provincial gazetteers or accounts occupy about a hundred printed volumes, aggregating 36,000 pages. A gigantic task has been completed at last, such as had hitherto baffled the efforts of all former governments. At length that central supervision and that methodical arrangement were brought to bear for the want of which so much able and conscientious work had on former occasions become labors in vain. But Dr. Hunter's services did not end here. Although the hundred volumes of information on all that relates to British India were by no means too elaborate for administrative requirements, they were not calculated for general use, and it was necessary to condense their information into an *Imperial Gazetteer* for the use of the public."

"In the *Imperial Gazetteer of India* great pains have been taken to secure uniformity and due proportion as well as completeness. It was necessary that every place which deserved mention should be recorded; while it was almost equally desirable that each place should receive neither less nor more space than its relative importance demanded. On this principle, about eight thousand places were selected from the statistical survey for treatment in the *Imperial Gazetteer*. Dr. Hunter then drew up model articles showing the exact order of subject and method of treatment; and thus, although there were several contributors, complete uniformity was secured alike in the preparation of the *Gazetteer* and in the method of preparing the survey."

"The principal feature of the six volumes that have now been published, is the article on India, which occupies 515 pages and is a complete work in itself. The arrangement of this admirable treatise is made in accordance with sound principles. The three bases of all statistics are space, number and time. Space is the abstract of all relations of co-existence, number of all relations of comparison, time of all relations of sequence. Under the first head Dr. Hunter gives a masterly and most interesting sketch of the geography and physical aspects of British India; under the second he furnishes details of the population; and under the third he has drawn up a condensed history of the people of India, divided into clearly marked periods, from that of the early non-Aryan races to the days of British rule. The value of this excellent historical summary is very much enhanced by the insertion in foot-notes of lists of the principal authorities for each period and each reign."

It supplies a brief but complete history of India from the original sources, Sanskrit, Mohammedan and Hindu, showing the growth of the Hindu race and religion and giving also a clear account of the present system of government.

"The three bases of statistics are naturally followed by economic statistics of production and distribution; and in the important section on agriculture and products Dr. Hunter discusses the

questions of improved husbandry, of irrigation and of famines. Then follow sections on commerce and trade, arts and manufactures, mines and minerals, and on vital statistics, the whole being illustrated by a series of tables." A similar treatment is observed in the articles on Bengal and other provinces, or districts and towns.

In concluding his review Mr. Markham remarks: "The Imperial Gazetteer is the crowning work which brings the results of the great statistical survey within reach of the general public. It represents twelve years of incessant labor demanding many high qualities for its efficient execution and natural gifts such as are rarely combined in one man. Learning, experience and scholarly research were no less essential than habits of accurate thought, administrative talent, and orderly, methodical arrangement. Above all, imagination was needed—that quality without which work cannot be endued with life and movement, but remains dead, a mere receptacle of lifeless facts. It is to the rare combination of literary skill and the imaginative faculty, with the qualifications of an able and energetic administrator, that we owe the completion of this great and difficult task."

This great achievement is a model for our own people. Such a Gazetteer of the United States should be the final result of the explorations, observations and collections that have been and are yet being made under the authority of the National and State Governments.

THE ARCTIC CAMPAIGN OF 1881.—The U. S. steamer *Jeannette* sailed from San Francisco on an exploring voyage through Behrings Straits on July 8, 1879. She was supplied for three years' voyage in the Arctic regions and Captain De Long's instructions do not require him to return until the expiration of that period. The *Jeannette* was last heard from by a letter from Captain De Long, dated August 27, 1879, off Cape Serdze on the north-east coast of Siberia. She was last seen on September 2d of that year by the American whaler *Sea Breeze* about fifty miles south of Herald Island, and on the following day several whalers in lat. $70^{\circ} 51' N.$, long. $174^{\circ} 30' W.$, saw the smoke of a steamer going north a little east of due south of the island. As no news has since been received of her safety, several vessels have been ordered by the Government to visit the Arctic seas for her relief if necessary.

The U. S. revenue steamer *Corwin* sailed on May 4, 1881, from San Francisco, and has already made investigations along the Siberian coast, resulting in the discovery of relics of one of the two missing whalers in the possession of the natives, who had obtained them in November, 1880, from a wreck northward of Cape Serdze. Captain Hooper expected to sail on July 8th from St. Michaels and proceed along the American shore as far as the ice would permit and then attempt to reach Wrangell Land.

The U. S. steamer *Rodgers* sailed from San Francisco on June 16th to search for and relieve the *Jeannette*. She is a full-rigged bark of 420 tons, heavily sheathed with three-inch oak plank. She is supplied with stores for four years, including large quantities of pemmican and lime juice. She is commanded by Lieutenant R. M. Berry and has a company of 35 officers and men. The paymaster is W. H. Gilder, formerly of the Schwatka expedition. She is to proceed to the coast of Siberia and thence to Herald Island and Wrangell Land, where Lieut. Berry hopes to winter.

The U. S. frigate *Alliance* has been ordered to cruise in the northern Atlantic, visiting the coast of Spitzbergen, in view of the possible return of the *Jeannette* by the east coast of Greenland or the shores of Franz-Josef Land. The *Alliance* sailed from Norfolk on June 16th, arrived at Reikiavik, Iceland, on July 9th, and at Hammerfest on the 25th.

Congress having appropriated the sum of \$25,000 to the establishment of two stations within the Arctic circle, at Lady Franklin Bay and Point Barrow, in accordance with the plan adopted by the Hamburg International Polar Conference, the parties to occupy them have been organized and despatched. The Lady Franklin Bay Colony will number twenty-six, commanded by Lieut. A. W. Greely, for twelve years acting signal officer, with two other officers, sixteen soldiers, four observers, one naturalist, two surgeons and one photographer. They sailed in the steamer *Proteus* from St. Johns, N. F., on July 7th. They go first to Disco to procure Eskimo guides, dogs and furs, and expect to be joined there by Dr. Pavey and Mr. H. Clay, who were left there by the *Gulnare* last year. The *Proteus* will then visit Lancaster Sound to see if any traces of the *Jeannette* are to be found, as is thought not unlikely, and then continue her course for Lady Franklin Bay in lat. $81^{\circ} 40'$. She will endeavor to call at Carey island and at the caches made by the English in Grinnell Land, which will be supplemented by supplies from the *Proteus*. On reaching Lady Franklin Bay the vessel is to be unloaded at once, so as to return to St. Johns. The expedition is provided with a number of portable houses and full supplies of stores of the best quality, including a very large stock of anti-scorbutics. After erecting the dwelling house and observatories, a sledge party is to visit Cape Joseph Henry to seek for tidings of the *Jeannette*. Full instructions are given by the War Department for the forming of collections and taking of observations of all kinds, as recommended by the Hamburg Conference. It is expected that the station will be visited yearly by steamers to replenish stores and bring back any disabled members of the party. Lieut. Greely is ordered to abandon his station not later than September 1, 1883, if not previously visited, and retreat southward by boat, following the east coast of Grinnell Land until the relieving vessel is met or Littleton island reached.

The Point Barrow party sailed on July 18th, from San Francisco on the schooner *Golden Fleece*. It consists of ten men, including the commander, Lieutenant P. H. Ray, a surgeon, astronomer, three observers, interpreter, etc. They take 16,000 feet of lumber, for the erection of a building thirty by forty feet and astronomical and magnetic observatories. The party is excellently equipped with instruments and is provisioned for two years. A vessel is expected to reach them annually. They are to remain for three years.

Many of the outlets from the Arctic sea are this year reported unusually obstructed by ice. Heavy ice floes are reported along the Labrador coast, and the pack ice is unusually heavy and far south in the European Arctic sea—Spitzbergen being at last advices entirely inaccessible. The past winter was unusually severe in Iceland. Owing to the large flow of ice it is thought that later in the season the seas in the higher latitude will be left unusually free and navigable.

The weather on the south-west coast of Greenland during the winter of 1880-1, is stated, however, to have been the mildest ever experienced in that vicinity. No ice formed in the bays or fiords and but little snow fell. The prevalence of south-west gales is assigned as one cause of this unusual climate.

Mr. Leigh Smith sailed from Peterhead in the third week of June. On reaching Eira Harbor in Franz-Josef Land, he purposes to construct a house from materials taken with him and then explore as far north as possible. He has a company of twenty-five sailors and assistants and provisions for fifteen months.

Besides Lady Franklin Bay and Point Barrow, the stations recommended to be established by the Hamburg Conference are Upernavik by Denmark, in Northern Finnmarken by Norway, on Jan Mayen and western coast of Greenland by Austria, on Spitzbergen by Sweden, on Novaya Zemlya [already opened] and at the mouth of the Lena by Russia.

The *Nature* states that the Swedish Government has decided to send a scientific expedition to Mossel Bay in the course of next year, for the purpose of collecting meteorological information. The expedition will be directed by Capt. Malmberg and will have to remain during the summer of 1882 and the winter of 1883, in order to obtain the observations of an entire year. Mossel Bay is situated to the north of Spitzbergen, lat. $79^{\circ} 54'$, long. $16^{\circ} 15'$. The locality is well known to the Swedes. Professor Nordenskiöld stayed there in the winter of 1872-3 with three ships.

MICROSCOPY.¹

METEORIC DUST.—From time to time fine dust, having nearly the same composition as certain meteorites, has fallen upon various parts of the earth's surface. * * * Professor Silvestri,

¹ This department is edited by Dr. R. H. WARD, Troy, N. Y.